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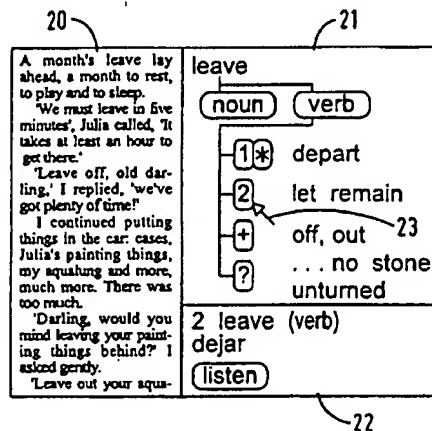
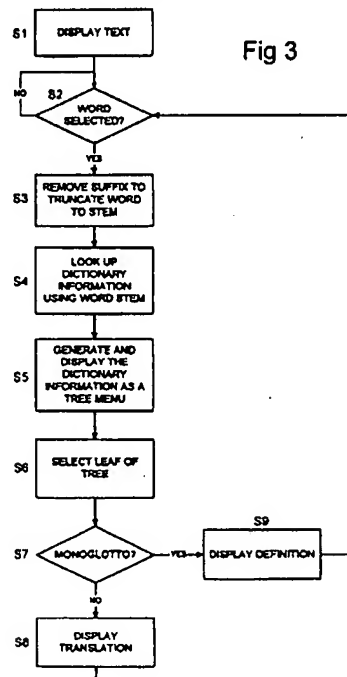
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(54) Abstract Title
Menu-based dictionary information retrieval system

(57) Information retrieval apparatus (Fig. 1) includes a display for displaying text information, S1, in a first region 20. The user can select a word from the text, S2. One or more semantic stems for the selected word are automatically generated, S3, by removing the prefix and/or suffix, so that inflection-independent "headword(s)" is/are generated and used to look up dictionary information in a database, S4. A menu is generated, from the retrieved dictionary information, S5, for display in a second region 21, and comprises menu items representing the/each possible meaning of the/each headword for the selected word, and/or grammatical information (e.g. possible parts of speech). When the user selects one or more of the menu items, S6, appropriate dictionary information (e.g. definition or translation information) is displayed in a third region 22. Audio and/or visual dictionary information can also be presented. The apparatus can be implemented in a web browser environment (Fig. 8), such that the displayed text provides hypertext links to the dictionary information.



At least one drawing originally filed was Informal and the print reproduced here is taken from a later filed formal copy.

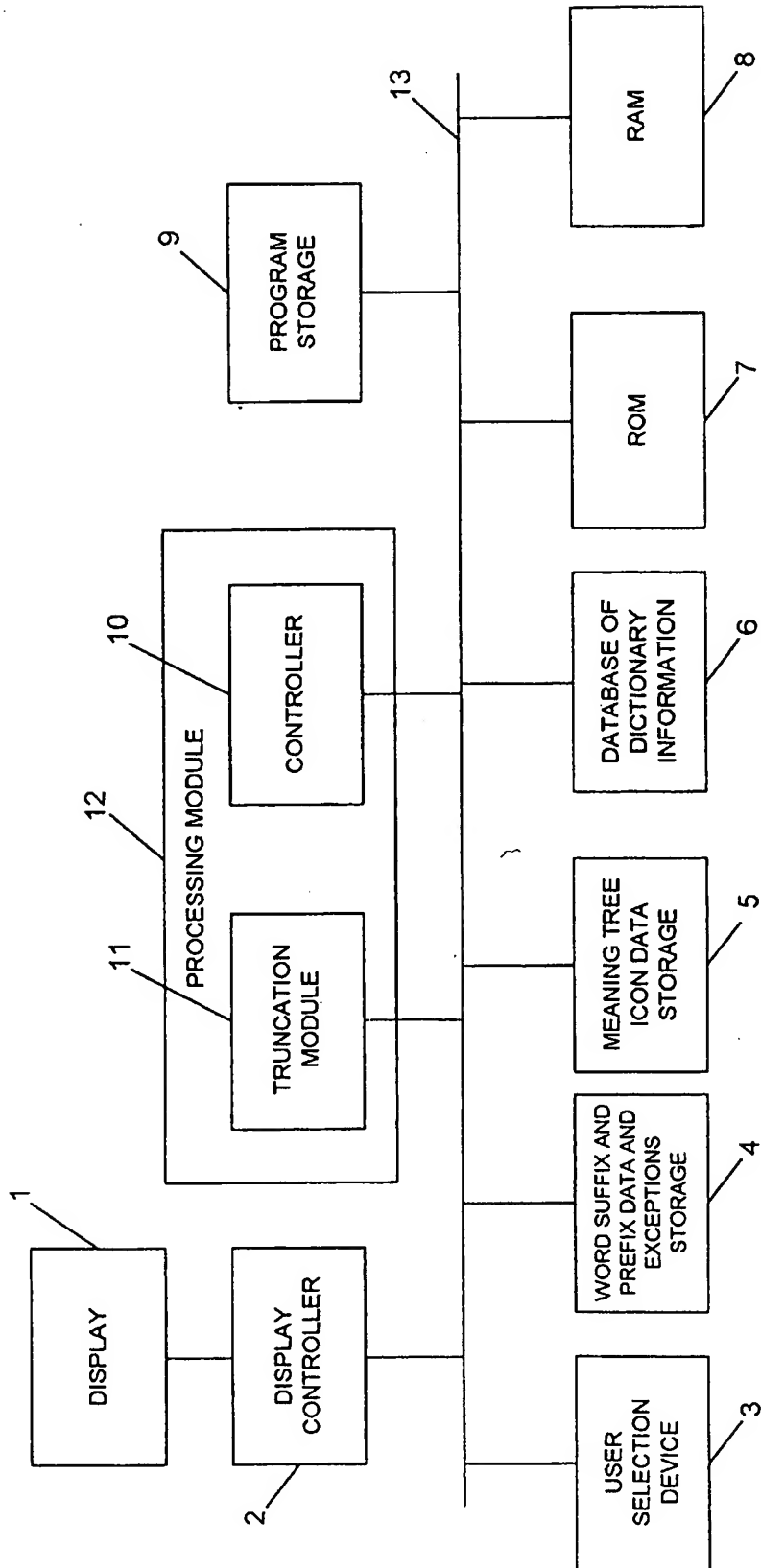


Fig 1

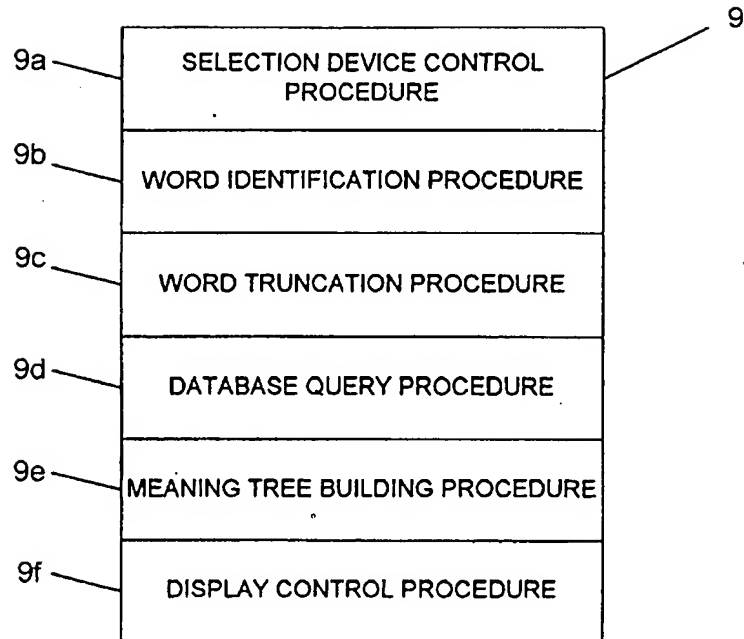
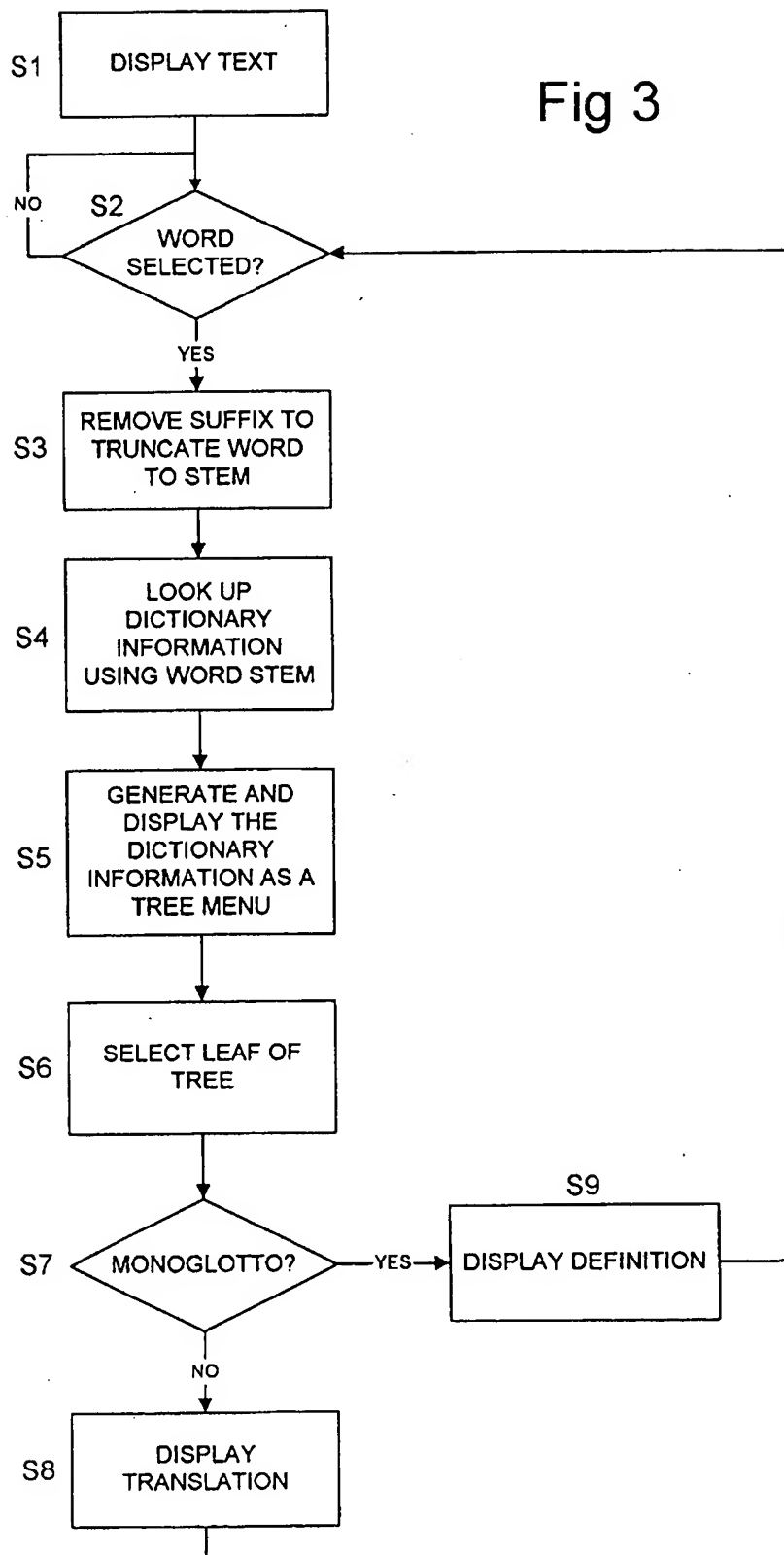


Fig 2

Fig 3



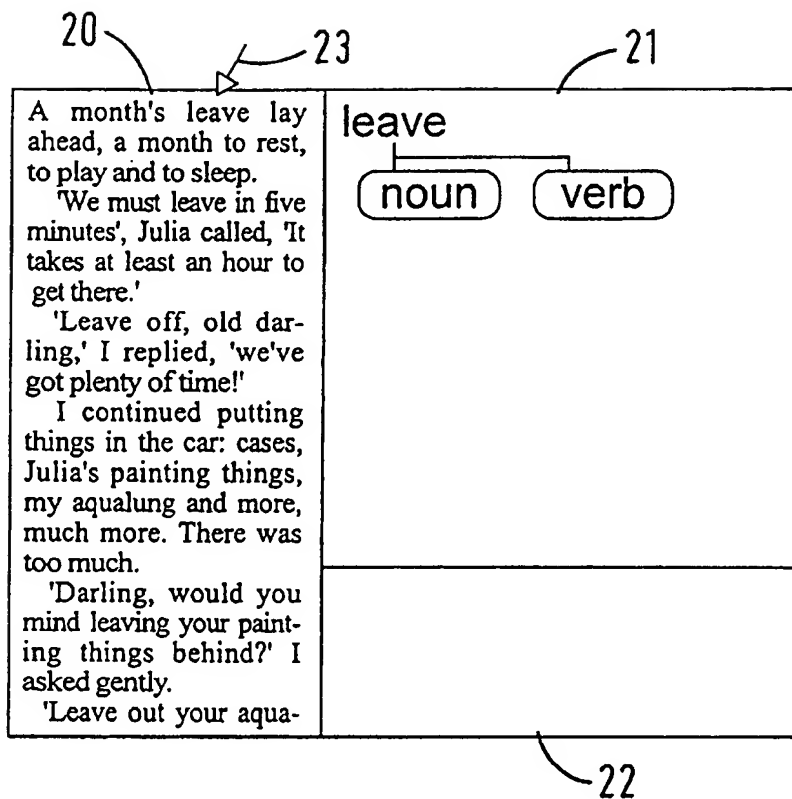


FIG. 4a

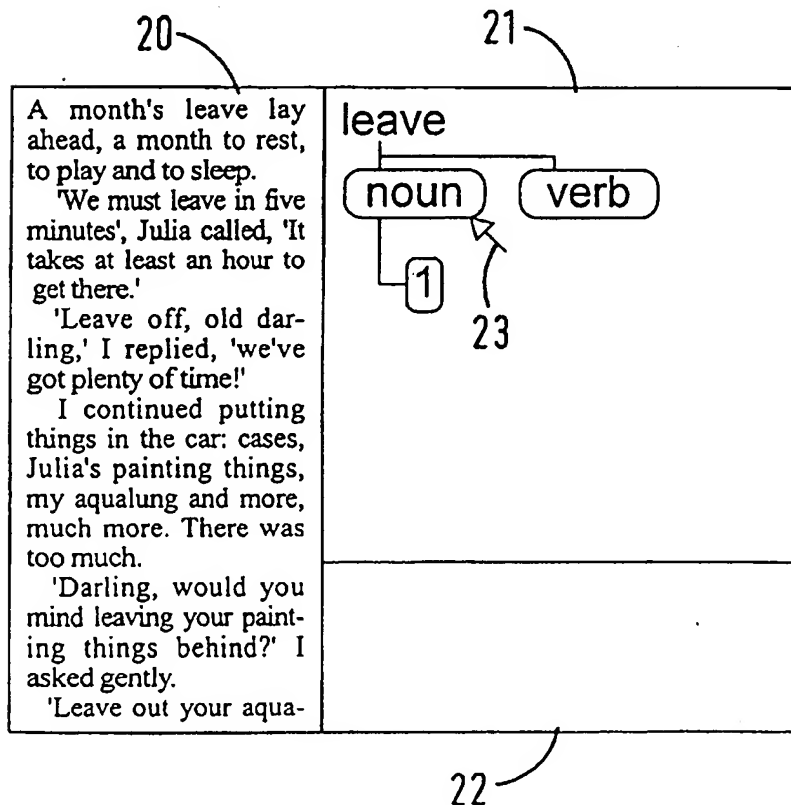


FIG. 4b

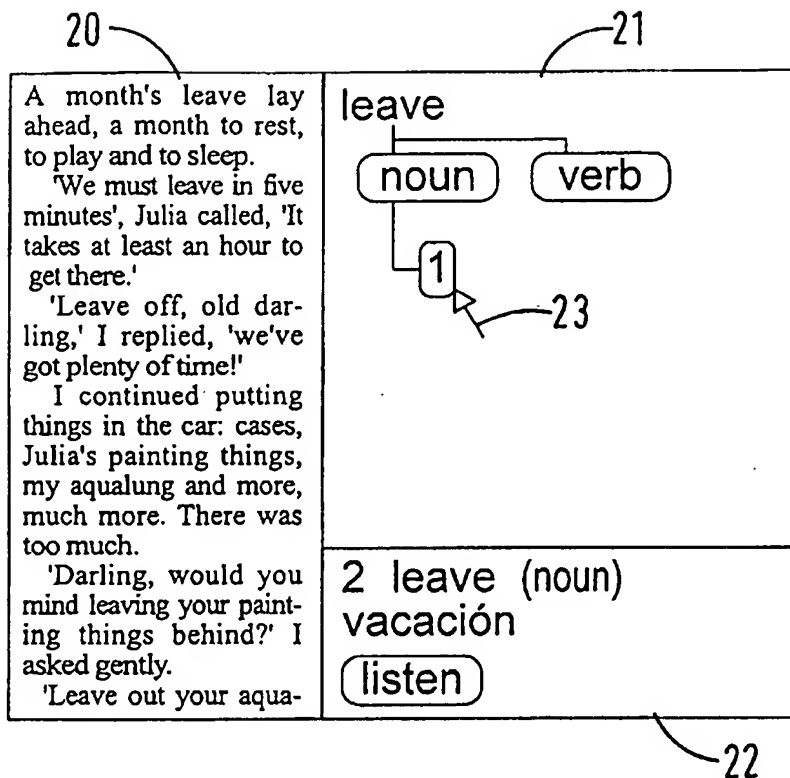


FIG. 4c

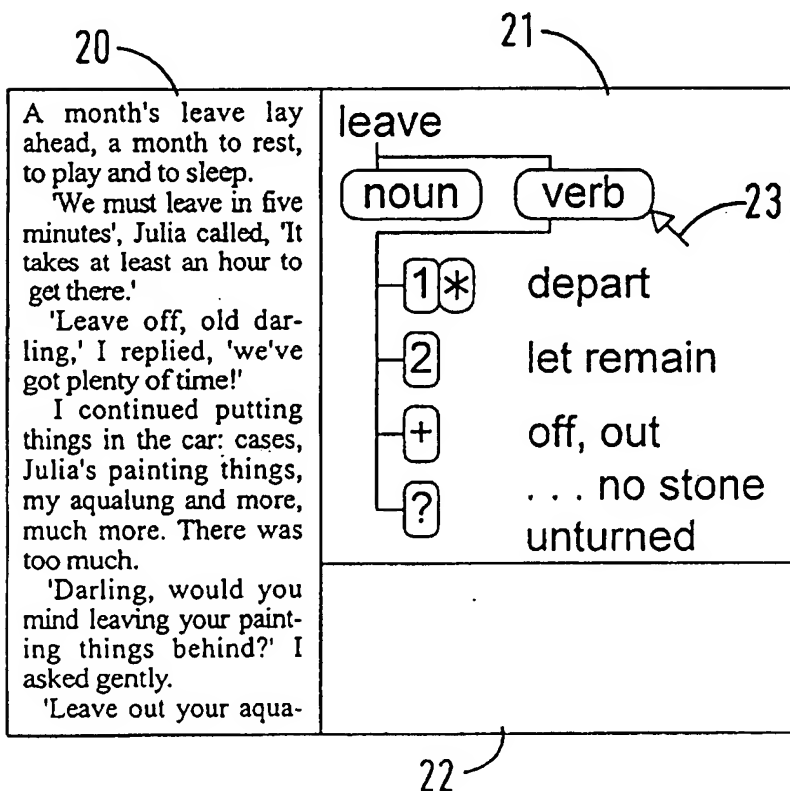


FIG. 4d

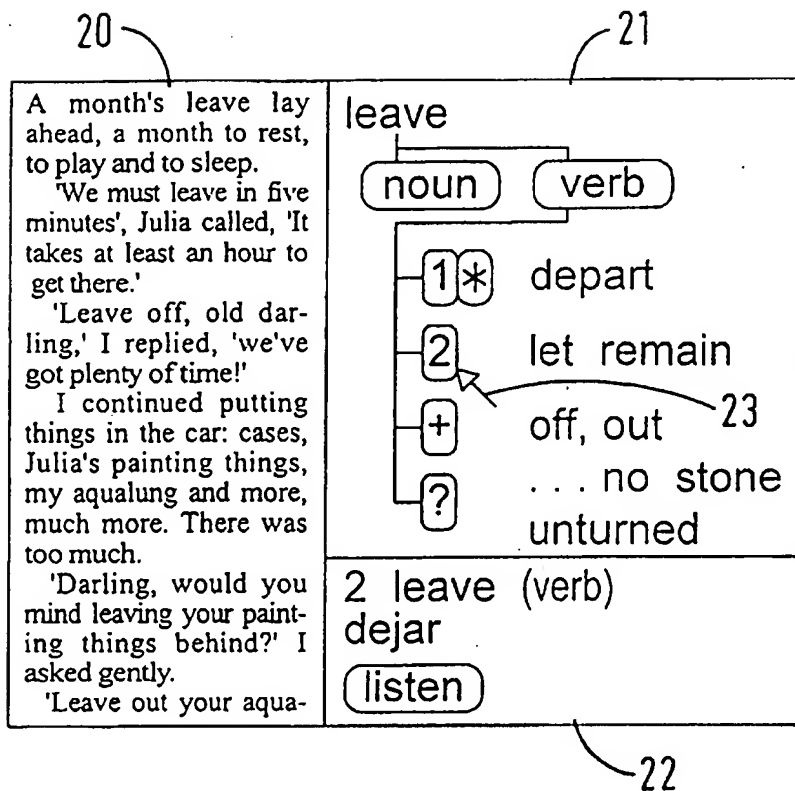


FIG. 4e

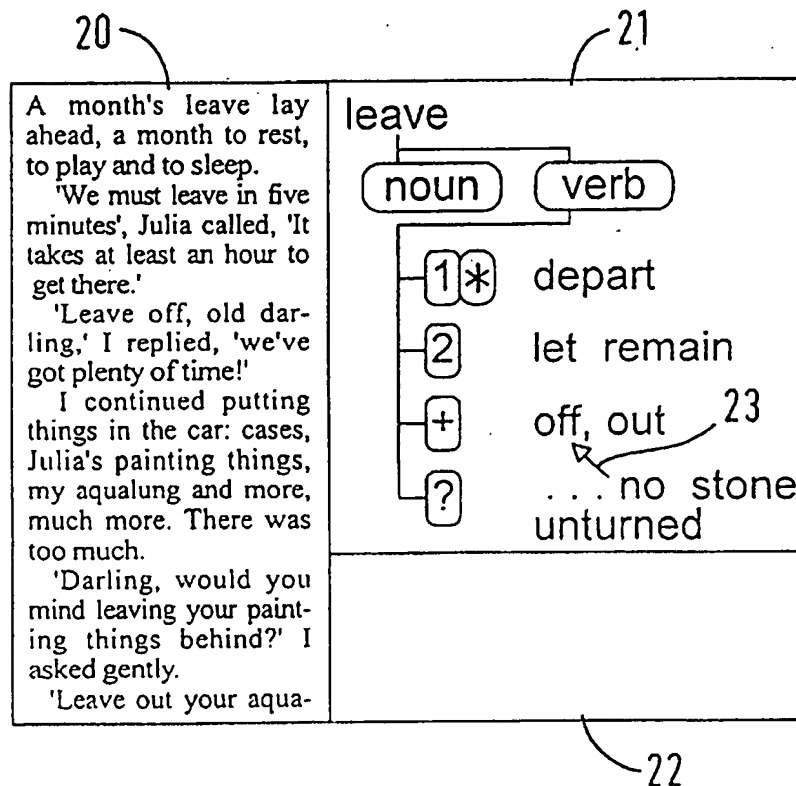


FIG. 4f

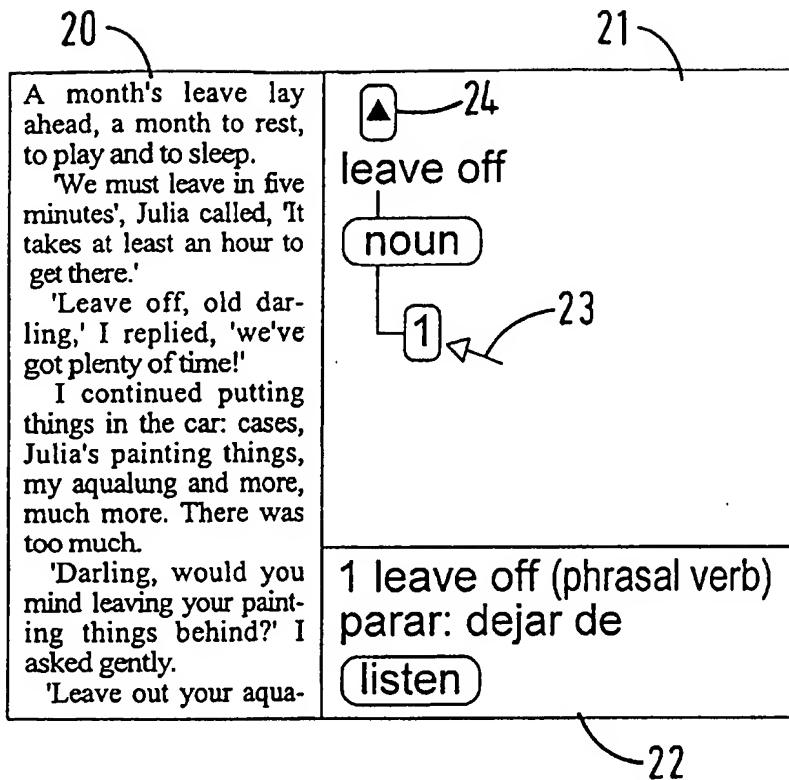
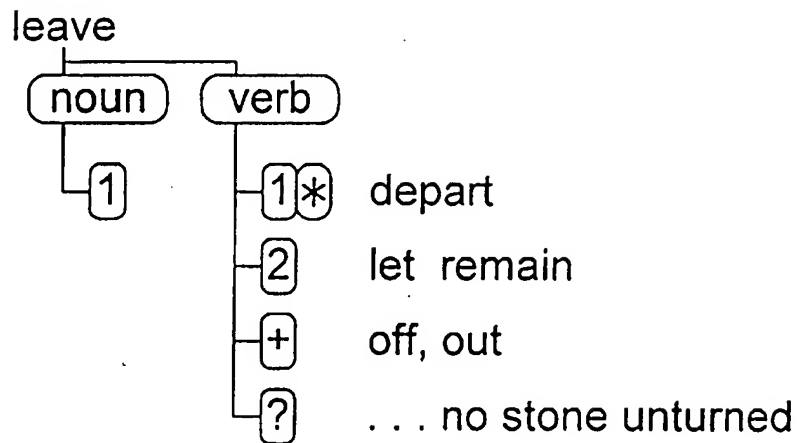
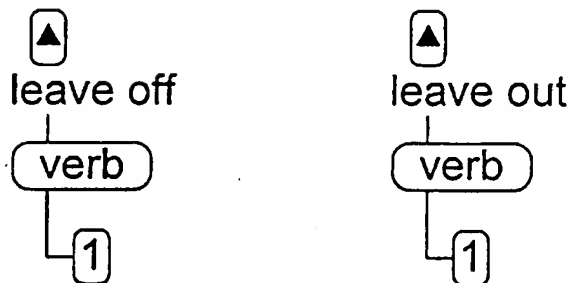
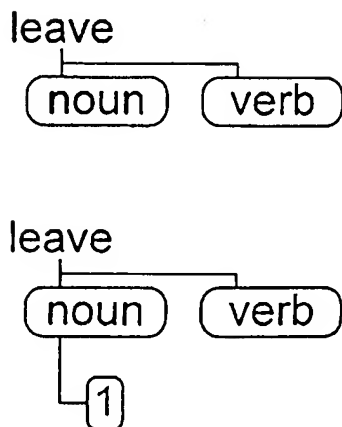
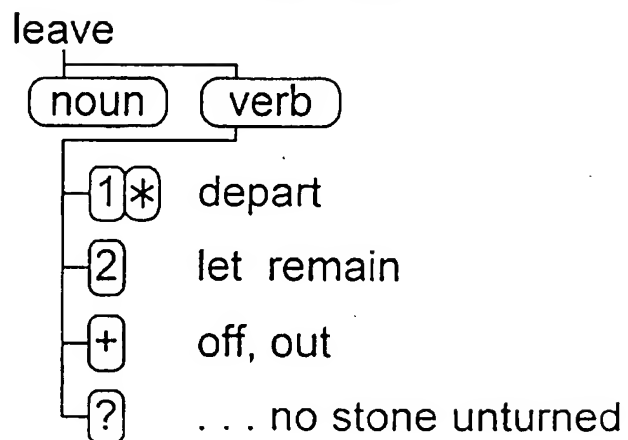
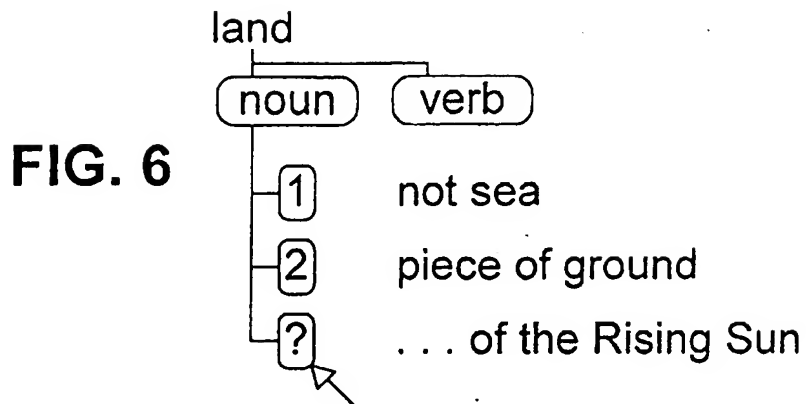


FIG. 4g

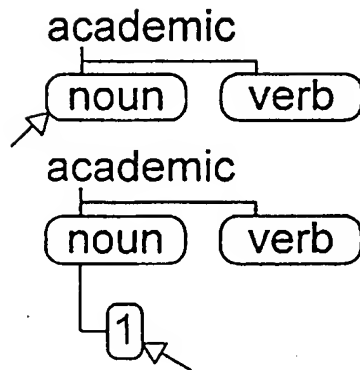
FIG. 5a**FIG. 5b****FIG. 5c****FIG. 5d**



Land of the Rising Sun
Japón

<u>Root</u>	<u>Suffix</u>
acadam	e
	eia
	ic ←
	ician
	ical
	ically
	y

FIG. 7



1 noun
academic

An academic is someone who teaches at a college, or who studies as part of their job

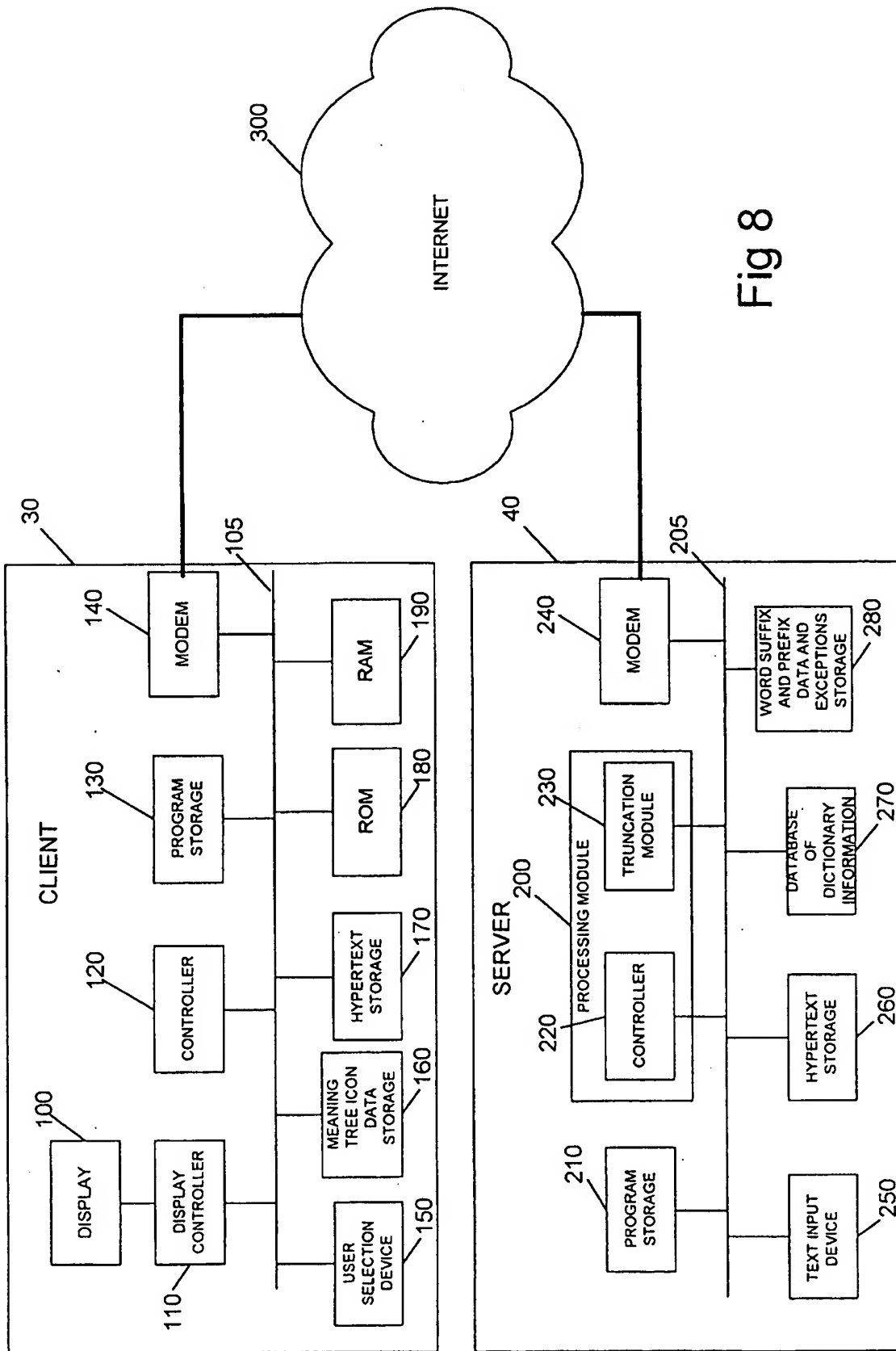


Fig 8

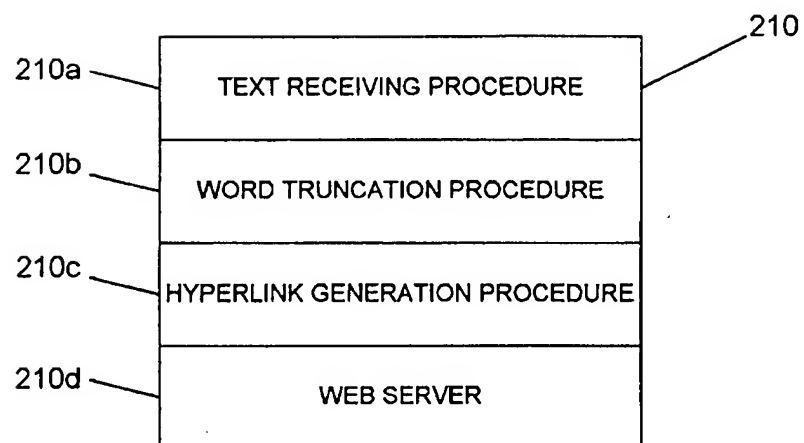


Fig 9

INFORMATION RETRIEVAL APPARATUS AND METHOD

The present invention generally relates to an information
5 retrieval apparatus and method and more particularly to
an apparatus and method for retrieving stored dictionary
information in response to a command generated by a user
interface.

10 With the increasing use of computers, text is now
becoming more commonly provided in a form for display on
a computer program e.g. on CD-ROMs or in a form of
information provided over the World Wide Web. Text can
thus be viewed and read from a computer screen. This has
15 the advantage over a conventional medium such as a book
in that it is more flexible and allows user interaction
and simultaneous access to for instance an electronic
dictionary. Thus, when a user of an electronic medium
has difficulty understanding displayed text, it is
20 possible for the user to look up the word using an
electronic dictionary. However, all dictionaries
conventionally ignore common inflections. Thus for
example English dictionaries ignore the terminal s (noun
plural and third person singular present verb), ing
25 (present participle) and ed (past participle and past
simple). All except the largest dictionaries also
ignore uncommon inflections: thus for example many

dictionaries do not include irregular past participles etcetera in their alphabetical listings of headwords. Thus, it is difficult for a user to obtain dictionary information for a word without some grammatical
5 knowledge. This is a particular problem for a user reading text in a language with which the user is unfamiliar e.g. a native Spanish speaking user reading English language text. It is an even greater problem when the user is reading a highly inflected language e.g.
10 a native English speaking user reading Spanish language text.

It is an object of the present invention to overcome this deficiency in the prior art and to provide a computer
15 interface which aids linguistic learning.

An aspect of the present invention provides a menu-based dictionary information retrieval system wherein a word in displayed text can be selected in order to enable the
20 retrieval of full dictionary information for the selected word. A dictionary headword or words which identify dictionary entries are generated to access the dictionary information. A menu is displayed to enable a user to select any entries given in the dictionary for the
25 headword or headwords for the selected word. In this way dictionary information for a word which can have different lexical meanings, different parts of speech for

a lexical meaning and different meanings for a part of speech can be studied, allowing the user to learn the meaning of the word in the context of the text in which it appears on the screen, to learn other meanings of the word, and to understand grammar associated with each meaning.

Another aspect of the present invention provides information retrieval apparatus having a user interface for generating a command to retrieve dictionary information from database means storing dictionary information, the user interface comprising:

display means for displaying text;

user operable selection means for selecting a word in the text;

command generating means for automatically generating a command to cause the retrieval of desired dictionary information from said database means for one or more semantic stems for the selected word, the or each semantic stem for the selected word being independent of the inflection of the selected word; and

menu generating means for generating a menu from the retrieved dictionary information for display by said display means, said menu comprising menu items representing the or each possible meaning of the or each semantic stem for the selected word and/or grammar information;

wherein said display means is responsive to the selection of one or more of the menu items using said selection means to display dictionary information dependent upon the selected meaning and/or grammar
5 information for a semantic stem for the selected word.

The present invention also provides a method of retrieving information from database means storing dictionary information, the method comprising the steps
10 of:

displaying text;

selecting a word in the text;

automatically generating a command to cause the retrieval of desired dictionary information from said
15 database means for one or more semantic stems for the selected word, the or each semantic stem for the selected word being independent of the inflection of the selected word;

generating a menu from the retrieval dictionary
20 information for display, the menu comprising menu items representing the or each possible meaning of the or each semantic stem for the selected word and/or grammar information; and

selecting one or more of the menu items for
25 displaying dictionary information dependent upon a selected menu item representing selected meaning and/or grammar information for a semantic stem for the selected

word.

The present invention thus provides a user interface which enables a user to access dictionary information without having a full understanding of the grammar of the text being read and it enables a user to explore the or each meaning of the selected word and associated grammatical information. Thus, the dictionary information stored in a database comprises comprehensive semantic and grammatical information and is not simply a glossary of the words used in the text being displayed. The displayed menu allows a user to navigate through the possible meanings of a selected word and associated grammatical information thereby expanding their vocabulary and grammatical understanding of the language of the displayed text.

In an embodiment the menu generating means is adapted to generate the menu to identify the or each semantic stem or dictionary headword, at least one part of speech (e.g. noun, adjective, adverb etc) for the semantic stem, and at least one meaning for the image part of speech. Thus in this embodiment a user can initially select a dictionary headword and then select the part of speech. Menu items will then be displayed representing the or each possible meaning for the part of speech and for the headword. By selecting a menu item dictionary

information for that meaning can be displayed. When the selected word corresponds to only one part of speech, menu items representing the alternative meanings may be displayed without the user selecting that part of speech.

5 Likewise, when only one possible meaning exists, that meaning may be displayed without user selection.

In an embodiment a menu is displayed as a series of submenus navigable by a user using the selection means,
10 wherein one or more final submenus comprises the menu items and the other submenus comprise navigation menu items for the selection of another submenu. This method of only displaying a limited number of levels of selectable menu items increases the clarity of the
15 information displayed to the user and reduces information overload to the user.

In an embodiment the submenus are displayed as a tree structure wherein a headword comprises the root of a tree
20 structure and the menu items comprise the leaves. This method of displaying the menu provides a graphic representation of the dictionary information thus enhancing the interface with the user.

25 In one embodiment the menu can include menu items representing idioms and/or phrasal verbs in addition to menu items representing grammatical information and/or

meaning information.

The dictionary information can comprise a definition of the word in the language of the original text, and/or the translation of the word into another language.

In order to enhance the interface between the user and the dictionary information, the display means is preferably adapted to display the text in a first region, the menu items in a second region and the dictionary information in a third region.

In addition to the translation information and/or definition information, the database means can store additional data such as audio and/or image data which can be retrieved in association with the translation information and/or dictionary information to allow the audio data to be played and the image data to be displayed. For instance, the audio data can comprise a pronunciation of the word.

In one embodiment the present invention can be implemented on a computer using a web browser. The display means is adapted to display text as hypertext having hyperlinks associated therewith and the command generating means generates an (hypertext markup language) HTML request to the hyperlink associated with the

selected word in the text. In such an embodiment the database means can store one or more HTML files which are the target of the HTML requests to thereby provide the dictionary information. Alternatively the database means
5 can comprise a database which is responsive to the HTML requests to retrieve the dictionary information.

In this embodiment the database can either be provided locally or remotely accessible over for instance the
10 internet or over a local area network (LAN). The database is located at a web server which can also include means for storing the hypertext for display by the display means and transmitting means for transmitting the hypertext for display by the display means and for
15 transmitting the dictionary information over the internet or LAN.

In this embodiment wherein the user interfaces with a computer running a web browser to access dictionary
20 information provided by a remote web browser, the web browser would initially request the text from the web server for display. The web server can have previously formed the hypertext automatically from input text in order to form the hyperlinks to other HTML files or to
25 a database. Where the dictionary information is provided within HTML files, the web browser can also receive these HTML files so that the web browser operates on

information locally. Alternatively, in order to avoid connection over the internet, the HTML files can be provided on a medium to the computer e.g. on a CD-ROM or magnetic disc.

5

In an alternative embodiment of the present invention when a word is selected the semantic stem of the selected word is automatically determined and used as a query or command to a database to retrieve the dictionary
10 information. In such an embodiment the database can be provided locally e.g. on a CD-ROM, magnetic medium or another electronic form, or the database can be provided remotely and accessible over a network such as a LAN or the internet.

15

Since the present invention can be implemented by a computer operating computer instructions, the present invention can also be embodied as a storage device storing computer readable instructions for causing a
20 programmable apparatus to carry out the steps of the method. Further, the present invention can be embodied as a signal conveying instructions for causing a programmable processing apparatus to perform the method e.g. a signal transmitting over the internet carrying the
25 HTML code.

The embodiments of the present invention will now be

described with reference to the accompanying drawings in which:

Figure 1 is a schematic drawing of the structure of the first embodiment of the present invention;

5 Figure 2 is a functional diagram of the program modules of the first embodiment;

Figure 3 is a flow diagram illustrating the operation of the first embodiment;

10 Figures 4a to 4g are illustrations of the displayed text, menu and dictionary information illustrating the selection of a particular dictionary entry;

Figures 5a to 5d illustrate all of the submenus of a complete menu;

15 Figure 6 illustrates the inclusion of an idiom menu item;

Figure 7 illustrates any submenu for the selection of a dictionary definition;

Figure 8 is a schematic diagram of a second embodiment of the present invention; and

20 Figure 9 is a functional diagram of the program modules of the second embodiment.

25 The first embodiment of the present invention will now be described with reference to Figures 1 to 3. As can be seen in Figure 1 the apparatus comprises a display for displaying text being read by a user, a menu for the selection of dictionary information and the dictionary

information itself. The display 1 is controlled by a display controller 2. The user selection device 3 which can comprise a keyboard or pointing device such as a mouse is provided to allow for the selection of a word
5 in the displayed text. A processing module 12 is provided and includes a controller 10 to control the functioning of the apparatus and a truncation module 11 to perform the truncation on the selected word of the text in order to form a semantic stem or headword which
10 can be used to look up dictionary data as will be described in more detail hereinafter. The truncation module 11 refers to word suffix and prefix data and exceptions in a storage module 4 in order to carry out the truncation process by removing the word suffix and/or
15 prefix. A database of dictionary information 6 is provided which is responsive to a received stem to output dictionary information. Controller 10 receives the dictionary information and uses meaning tree icon data from storage module 5 to form a menu which can be
20 displayed on the display 1. The apparatus also includes a program storage module 9 for storing the program modules, read only memory (ROM) 7 for storing conventional control programs, and random access memory (RAM) 8 for use by the controller 10 and the truncation
25 module 11 as working memory. All of the units of the apparatus are connected together by a bus 13.

Figure 2 is a functional diagram of the program storage module 9 illustrating the program modules stored therein. A selection device control procedure 9a controls the operation of the user selection device 3 and receives
5 information regarding the position of a selection cursor on the text. The word identification procedure 9b identifies the word corresponding to the position of a cursor operated by the user selection device 3. The word truncation procedure 9c receives the identified word and
10 truncates the word to generate the stem. The database query procedure 9d uses the stem in order to query the database in order to retrieve dictionary information therefrom. The meaning tree building procedure 9e forms the meaning tree menu using the retrieved dictionary
15 information and the meaning tree icon data. The menu is then displayed by the display control procedure 9f which also controls the displaying of the text and the dictionary information.

20 The operation of this embodiment will now be described with reference to Figure 3. In step S1 text is displayed on the display 1 and in step S2 the process waits until a word has been selected in the text. When a word has been selected, in step S3 the suffix is removed to
25 truncate the word to generate a stem. In step S4 the stem is then used to look up dictionary information in the database 6. A tree menu is then generated and

displayed using the dictionary information and the meaning tree icon data. The user can then select a leaf of the tree i.e. a menu item in step S6. In step S7 if the dictionary information represents a monoglotto in step S9 the dictionary definition corresponding to the selected menu item is displayed. If the dictionary information is polyglotto in step S8 the translation information for the selected menu item is displayed. The process then returns to step S2.

10

In this embodiment of the present invention the stem of a word used for querying the database is generated "on the fly" as the word is selected. The dictionary information database can either be provided locally or remotely and accessible via a network such as a LAN or the internet. The dictionary information that is returned following the receipt of the stem by the dictionary information database is the or each headword, the or each part of speech, the meaning or meanings, and possibly grammatical information and idioms.

20

The method of removing the prefix and/or suffix in order to determine the stem of the selected word comprises a number of steps following rules. These rules use the word suffix and prefix data and exceptions in the storage module 4. For example, the suffixes of the words representing inflections are removed by reference to the

25

rules of grammar and a list of exceptions to ensure that the meaning of the stem is not lost or significantly changed from the meaning of the selected word.

5 Figures 4a to 4g illustrate the appearance of the display during the selection of a particular dictionary entry. As can be seen in Figure 4a the display is divided into three regions. In a first region 20 on the left hand side the text being read is displayed. On the right hand
10 side top part 21 of the display the menu is displayed and in the right hand bottom part 22 of the display the dictionary information can be displayed. As can be seen in Figure 4a the word "leave" is selected for example using a pointer 23. This causes the display of the
15 headword "leave" and the parts of speech for the headword in the display region 21. In this example the headword "leave" has the parts of speech noun and verb.

In Figure 4b the part of speech "noun" is selected by the
20 user using the pointer 23 to thereby cause the menu to display a menu item numbered 1 illustrated as a branch of the menu tree from the part of speech "noun". In Figure 4c the user selects the menu item 1 in order to cause the display of dictionary information in the form
25 of translation information in the display region 22. The display region 22 also displays an icon "listen" which is selectable by a user in order to play back audio data

comprising the pronunciation of the word to aid understanding. In this example it is being assumed that the reader of the text in the display region 20 is a native Spanish speaker and thus in order to aid
5 understanding of the text the translation of the noun "leave" is provided in the display region 22 into the native tongue of the reader and the audio data which can be played is a pronunciation of the word "leave".

10 In Figure 4d a user has now selected the part of speech "verb" and the menu has now changed to illustrate the branches of the tree from the part of the speech "verb" which include two meanings 1 and 2, grammatical information associated with the first meaning and
15 indicated by the icon "*", phrasal verbs "leave off" and "leave out" selectable by selecting the words "off" and "out" adjacent the icon "+", and the idiom "leave no stone unturned" selectable using the icon "?".

20 In Figure 4e a user selects the second meaning of the verb "leave" and in region 22 of the display the translation information is displayed together with the "listen" icon.

25 In Figure 4f the user has selected the phrasal verb "leave off" which causes the menu in display region 21 to change as illustrated in Figure 4g. The menu

displayed is an icon 24 to return to the previous menu together with the headword "leave off" the part of speech "noun" and a single meaning indicated by the icon 1. In Figure 4g the meaning is selected in order to display the translation information in the region 22 of the display. Figures 5a to 5d illustrate all of the submenus comprising the complete menu for the headword "leave". As can be seen, the complete menu comprises a tree structure having certain menu items which lead to submenus and other menu items which comprise the leaves of the tree. Such menu items can comprise meanings, grammatical information, phrasal verbs and idioms.

Figure 6 illustrates yet another submenu for the headword "land" wherein a menu item is included for the idiom "land of the rising sun" and when this is selected the translation information illustrated is displayed.

Figure 7 illustrates another embodiment wherein when a word is selected such as "academic" the root or stem of the word is illustrated together with possible suffixes. A user is able to select a particular suffix in order to select a particular headword. In this example the suffix "ic" is chosen from the headword "academic" whereupon the menu having the headword "academic" and the parts of speech "noun" and adjective is displayed. When a user selects "noun" the menu changes to display a single

meaning for the selected part of speech "noun". When a user selects the single meaning indicated by the icon 1, the dictionary definition of the word for the selected meaning is displayed. Alternatively, when only one
5 possible meaning is available, that meaning may be displayed without further selection.

In an extension to the embodiments described hereinabove, in addition to selecting items in the submenus, the
10 displayed dictionary information in the region 22 may also comprise selectable items e.g. hypertext to enable further information to be obtained and displayed. For example, in Figure 7, the word "college" may be selected in the dictionary definition of the word "academic" and
15 the dictionary definition of the word "academic" will remain displayed in the display region 22 whilst a headword "college" will appear in the display region 21 together with its meaning menu.

20 Another embodiment of the present invention will now be described which utilises hypertext mark up language (HTML). In the embodiment a client 30 comprising a computer operating a web browser is arranged at a location connected via the internet 300 to a web server
25 40. The client 30 comprises a display 100 for displaying the hypertext, menus and dictionary information. This is controlled by a display controller 110. A user

selection device 150 is provided to allow a user to select a word in the displayed hypertext. The hypertext is stored in the storage device 170 and the operation of the client is generally controlled by the controller 120.

5 A program storage module 130 is provided for storing programs such as the web browser. A read only memory unit (ROM) 180 is provided for storing general control programs and a random access memory unit (RAM) 190 is provided to act as the working memory used by the

10 controller 120. A modem 140 is provided for communicating with the server 40 via the internet 300. Also meaning tree icon data is stored in the storage unit 160 in order to enable the construction of the meaning tree menu upon the receipt of the dictionary information

15 from the server 40. The hypertext which has been received following the conventional HTML request to the server 40 is stored in the storage unit 170. All the units of the client 30 are connected via a bus 105.

20 A client 30 thus operates as a conventional web browser whereby requests are made for an HTML file which comprises the hypertext to be displayed and read. This is stored in the hypertext storage unit 170 and can then be selected by the user using the user selection device

25 150. When a selection is made by the user, the hyperlink detected causes degeneration of an HTML request for the required dictionary information which is transmitted via

the modem 140 to the server 40.

The server 40 comprises a text input device 250 for inputting text to be used to form hypertext. A hypertext
5 storage unit 260 is provided to store the generated hypertext. The database 270 of dictionary information is provided together with word suffix and prefix data and exceptions in a storage unit 280. A processing module 200 comprises a controller 220 for the general control
10 of the server 40 and a truncation module 230 for truncating the input text and for generating the hypertext. The program storage module 210 stores the programs used by the processing module 200. A modem 240 is provided for communication over the internet 300 with
15 the client 30. All of the units of the server 40 are connected together via a bus 205.

The server stores a number of hypertext files in the hypertext storage unit 260 which can be accessed by the
20 client 30 upon generation of the appropriate HTML request. The hypertext storage thus represents a library of text which can be accessed and read remotely at the client 30. In order to generate the hypertext, text is input by the input device 250 and the truncation module
25 230 uses the word suffix and prefix data and exceptions in the storage module 280 in order to generate stems for the words which can then be used to form the basis of

hyperlinks. The hyperlinks can comprise references to HTML files stored in the database of dictionary information 270 or to parts of the files. Alternatively, the links can simply be received by the database of
5 dictionary information and converted to conventional database queries in order to return the requested dictionary information.

Thus the server 40 operates to receive a request
10 initially for hypertext from the hypertext storage unit 260 and transmit the hypertext. The server 40 will then await receipt of requests for dictionary information in the form of hyperlinks. These will be referred to the database 270 to return the dictionary information in the
15 form of HTML data. The client 30 when it receives the HTML data comprising the dictionary information can then form the menu using the meaning tree icon data and display it.

20 Figure 9 is a functional diagram of the computer program modules stored in the program storage module 210. The text receiving procedure 210a controls the receipt of text. The word truncation procedure 210b generates the stems for the received text. The hyperlink generation
25 procedure 210c generates the hyperlinks for the hypertext. Also there is a web server program 210d to control the server to act as a web server.

In this embodiment the stems of the words of the text are generated in a batch and stored before the text is displayed to a user. This enables simple hyperlinks to be used as commands or queries to retrieve dictionary information. The process by which the hyperlinks can be generated comprises the steps of identifying significant words i.e. ignoring common words which are not to be included in the dictionary information e.g. a, am, an, and, are, as, at, be, been, but, by, could, do, does, did, down, for, from, had, has, have, he, her, hers, him, his, how, I, if, in, into, is, it, its, may, me, might, mine, more, must, my, no, not, now, of, on, or, our, ours, out, shall, she, so, than, that, the, their, theirs, them, there, these, they, this, those, to, up, us, very, was, we, were, what, when, where, which, who, whom, whose, why, will, with, would, you, yes, your, yours. For the significant words the suffixes are deleted so that the inflections of the words are ignored bearing in mind the exceptions. For this operation the word suffix and prefix data and exceptions is referred to. Once the stem has been identified in this way, a hypertext link can be generated in the text thus converting the input text into an HTML file with hyperlinks. Thus in this embodiment the stem which acts as the query is converted into an intermediary hyperlink.

Although in this embodiment the hypertext and the

dictionary information is remote to the user interface,
in the nature of the web interface and HTML, this need
not be so. The database of dictionary information can
be provided locally e.g. by downloading over the internet
5 as can the hypertext. This is particularly so when the
database of dictionary information comprises HTML files.
Alternatively, the hypertext and database of dictionary
information could be provided in a storage medium e.g.
a CD ROM or magnetic medium such as a disc. When the
10 hypertext and dictionary information is provided locally,
the hypertext must be generated prior to the operation
of the dictionary information retrieval method.

Although the present invention has been described
15 hereinabove with reference to specific embodiments, the
present invention is not limited to such embodiments and
modifications with the spirit and scope of the present
invention will be apparent to a skilled person in the
art.

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CLAIMS:

1. Information retrieval apparatus having a user interface for generating a command to retrieve dictionary
5 information from database means storing dictionary information, the user interface comprising:
display means for displaying text;
user operable selection means for selecting a word in the text;
- 10 command generating means for automatically generating a command to cause the retrieval of desired dictionary information from said database means for one or more semantic stems for the selected word, the or each semantic stem for the selected word being independent of
15 the inflection of the selected word; and
- menu generating means for generating a menu from the retrieved dictionary information for display by said display means, said menu comprising menu items representing the or each possible meaning of the or each
20 semantic stem for the selected word and/or grammar information;
- wherein said display means is responsive to the selection of one or more of the menu items using said selection means to display dictionary information
25 dependent upon the selected meaning and/or grammar information for a semantic stem for the selected word.

2. Information retrieval apparatus according to claim
1 wherein said menu generating means is adapted to
generate the menu to identify the or each semantic stem,
at least one part of speech for the semantic stem, and
5 at last one meaning for the or each part of speech.

3. Information retrieval apparatus according to claim
1 or claim 2 wherein said display means is adapted to
display said menu as a series of submenus navigable by
10 a user using said selection means, wherein one or more
final submenus comprises said menu items and the other
submenus comprise navigation menu items for the selection
of another submenu.

15 4. Information retrieval apparatus according to claim
3 wherein said display means is adapted to display said
submenus as a tree structure, wherein a semantic stem
comprises the root of a tree structure and said menu
items comprise the leaves.

20 5. Information retrieval apparatus according to any
preceding claim wherein said menu generating means is
adapted to generate the menu to include menu items
representing idioms and/or phrasal verbs.

25 6. Information retrieval apparatus according to any one
of claims 1 to 4 wherein said menu generating means is

adapted to generate said menu to include initially selectable menu items representing possible suffixes for the or each semantic stem.

5 7. Information retrieval apparatus according to any preceding claim wherein said display means is adapted to display said text in a first region thereof, said menu items in a second region thereof, and said dictionary information in a third region thereof.

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8. Information retrieval apparatus according to any preceding claim wherein said command generating means is adapted to cause the retrieval of the desired dictionary information as translation information and/or definition
15 information.

9. Information retrieval apparatus according to any preceding claim wherein said command generating means is adapted to cause the retrieval of audio data associated
20 with said dictionary information, the apparatus including audio playing means for playing any audio data retrieved in association with dictionary information selected and displayed by said display means.

25 10. Information retrieval apparatus according to any one of claims 1 to 8 wherein said command generating means is adapted to cause the retrieval of image data

associated with said dictionary information, and said display means is adapted to display any image data retrieved in association with dictionary information selected and displayed by said display means.

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11. Information retrieval apparatus according to any preceding claim wherein said display means is adapted to display the text as hypertext having hyper links associated therewith, and said command generating means
10 is adapted to generate an HTML request to the hyperlink associated with the selected word in the text.

12. Information providing apparatus for use with the information retrieval apparatus according to claim 11,
15 the information providing apparatus including said database means storing the dictionary information;

storage means for storing hypertext for display by said display means; and

transmitting means for transmitting the hypertext
20 to the information retrieval apparatus for display by said display means and for transmitting the dictionary information to the information retrieval apparatus.

13. Information providing apparatus according to claim
25 12 wherein said database means is adapted to store one or more HTML files which are the target of the HTML requests.

14. Information providing apparatus according to claim 12 wherein said database means comprises a database responsive to the HTML requests to retrieve the dictionary information.

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15. Information providing means according to any one of claims 12 to 14 including hypertext forming means for automatically forming said hypertext from input text.

10 16. Information retrieval apparatus according to claim 11 wherein said database means is adapted to store one or more HTML files which are the target of the HTML requests.

15 17. Information retrieval apparatus according to claim 11 wherein said database means comprises a database responsive to the HTML requests to retrieve the dictionary information.

20 18. Information retrieval apparatus according to claim 11, claim 16 or claim 17 including hypertext forming means for automatically forming said hypertext from input text.

25 19. A method of retrieving information from database means storing dictionary information, the method comprising the steps of:

displaying text;

selecting a word in the text;

automatically generating a command to cause the
retrieval of desired dictionary information from said
5 database means for one or more semantic stems for the
selected word, the or each semantic stem for the selected
word being independent of the inflection of the selected
word;

generating a menu from the retrieval dictionary
10 information for display, the menu comprising menu items
representing the or each possible meaning of the or each
semantic stem for the selected word and/or grammar
information; and

selecting one or more of the menu items for
15 displaying dictionary information dependent upon a
selected menu item representing selected meaning and/or
grammar information for a semantic stem for the selected
word.

20 20. A method according to claim 19 wherein the menu is
generated to identify the or each semantic stem, at least
one part of speech for the semantic stem, and at least
one meaning for the or each part of speech.

25 21. A method according to claim 20 wherein the menu is
displayed as a series of submenus navigable by a user,

one or more final submenus comprising said menu items and the other submenus comprising navigation menu items.

22. A method according to claim 21 wherein said submenus
5 are displayed as a tree structure, a semantic stem comprising the root of a tree structure and said menu items comprising the leaves.

23. A method according to any one of claims 19 to 22
10 wherein the menu includes menu items representing idioms and/or phrasal verbs.

24. A method according to any one of claims 19 to 22 wherein the menu includes initially selectable menu items
15 representing possible suffixes for the or each semantic stem.

25. A method according to any one of claims 19 to 24 wherein said text is displayed in a first region of a
20 display means, said menu items are displayed in a second region of said display means, and said dictionary information is displayed in a third region of said display means.

25 26. A method according to any one of claims 19 to 25 wherein the dictionary information retrieved is translation information and/or definition information.

27. A method according to any one of claims 19 to 26 including the steps of retrieving audio data associated with said dictionary information, and playing any audio data retrieved in association with dictionary information
5 selected and displayed.

28. A method according to any one of claims 19 to 26 including the steps of retrieving image data associated with the dictionary information, and displaying any image
10 data retrieved in association with dictionary information selected and displayed.

29. A method according to any one of claims 19 to 28 wherein the text is displayed as hypertext having
15 hyperlinks associated therewith, and the command generating step comprises generating an HTML request to the hyperlink associated with the selected word in the text.

20 30. A method according to claim 29 wherein said database means stored one or more HTML files which are the target of the HTML requests.

31. A method according to claim 29 wherein said database
25 means comprises a database and the HTML requests cause the retrieval of the dictionary information from the database.

32. A method according to any one of claims 29 to 31 including the initial step of automatically forming said hypertext from input text.

5 33. A storage device storing computer readable instructions for causing a programmable processing apparatus to perform the method of any one of claims 19 to 32.

10 34. A signal conveying instructions for causing a programmable processing apparatus to perform the method of any one of claims 19 to 32.

35. Information retrieval apparatus substantially as
15 hereinbefore described with reference to and as illustrated in any of the accompanying drawings.

36. Information providing apparatus substantially as
hereinbefore described with reference to and as
20 illustrated in any of the accompanying drawings.

37. A method of retrieving information substantially as
hereinbefore described with reference to and as
illustrated in any of the accompanying drawings.

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Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): G4A (AUDL); G4H (HF)

Int Cl (Ed.6): G06F 17/20, 17/27, 17/28, 17/30

Other: Online: WPI, INSPEC, COMPUTER

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2314183 A (SHARP), see whole document.	
A	EP 0810534 A2 (OKI ELECTRIC INDUSTRY), see col. 6 - col. 13.	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.